



Curriculum map – Year 9 Combined chemistry

YEAR 9 TOPIC(s)	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
What students will know	Rate and extent of change Rate depends on the frequency of collisions, and this can be changed by changing the temperature, surface area, catalysts and concentration.	Rate and extent of change and Using resources Humans use the Earth's resources to provide warmth, shelter, food and transport. Some resources are renewable, and some are finite. Chemistry can make things more sustainable Potable water is essential to humans.	Using resources Humans can obtain potable water from ground, fresh and sewage water and the processes needed to do this. Metals are finite and chemists are finding new ways to extract them; phytomining and bioleaching. The impact of products can be assessed using a lifecycle assessment	Using resources and Organic chemistry We can increase sustainability by reducing, reusing and recycling. Crude oil is a mixture of mainly hydrocarbons Crude oil is the remains of ancient biomass – mainly plankton that was buried in mud The general formula for the homologous series of alkanes is C_nH_{2n+2}	Organic chemistry Some properties of hydrocarbons depend on their size; boiling point, flammability and viscosity Cracking long chain hydrocarbons makes them more useful as fuels. When cracking takes place, an alkane becomes an alkane and alkene. Alkenes form polymers which are used to make many other chemicals	Chemistry of the atmosphere Percentage of gases in the atmosphere, the composition of the early atmosphere, the changes that occurred on Earth that resulted in today's atmosphere, the role of algae and photosynthesis,

YEAR 9	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
What students will be able to do	<p>Identify the units of rate using data provided</p> <p>Identify patterns of graphs</p> <p>Choose equipment that increases the accuracy of an investigation</p>	<p>Analysis and purification of water samples from different sources, including pH, dissolved solids and distillation</p>	<p>Use data to carry out a comparative life cycle assessment for a paper bag and a plastic bag</p>	<p>Make models of alkane molecules using molecular modelling kits.</p> <p>Draw the first 4 alkanes</p>	<p>Use data to predict the boiling points of alkanes</p> <p>Carry out an investigation to determine what happens to the viscosity of hydrocarbons as they increase in size</p> <p>Balance cracking equations</p>	<p>Calculate the percentage change of gases in the atmosphere, calculating the degrees needed to draw a pie chart,</p>
Beyond the classroom	<p>How can we make antimalarial medicine faster?</p> <p>https://www.sciencejournalforkids.org/wp-content/uploads/2021/09/artemisinin-2_article.pdf</p> <p>Science club – make their own iodine clock solutions that react in time to music</p>	<p>How can your smart phone make water safe to drink?</p> <p>https://www.sciencejournalforkids.org/wp-content/uploads/2021/01/smartphone_article.pdf</p>	<p>How much money is stored under our feet?</p> <p>https://www.sciencejournalforkids.org/wp-content/uploads/2017/01/Econ_article.pdf</p> <p>Where did my plastic go?</p> <p>https://www.sciencejournalforkids.org/wp-content/uploads/2019/08/plastic-article.pdf</p> <p>Families can visit Reed’s Refillery in Chorley town center. It offers zero waste on dry foods, household liquids and toiletries – reduces use of water, materials and energy</p>	<p>How can we find oil-eating bacteria to clean up the sea?</p> <p>https://www.sciencejournalforkids.org/wp-content/uploads/2020/08/Bioremediation_article.pdf</p> <p>Discuss a local petrochemical company Kerax (0.4 miles from school)</p>	<p>How do oil spills impact fiddler crabs?</p> <p>https://www.sciencejournalforkids.org/wp-content/uploads/2019/09/fiddler_crab_article.pdf</p>	<p>How do some algae make the Earth warmer</p> <p>https://www.sciencejournalforkids.org/wp-content/uploads/2021/12/algal_photosynthesis_article.pdf</p>

